

Department of Energy

Ohio Field Office Fernald Area Office

P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155



2936

APR 26 2000

Mr. Gene Jablonowski, Remedial Project Manager
U.S. Environmental Protection Agency
Region V, SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0629-00

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Jablonowski and Mr. Schneider:

RESPONSE TO COMMENTS ON SILO 3 PROJECT SITE PREPARATION PACKAGE

- References:
- 1) Letter, G. Jablonowski to J. Reising, "Conditional Approval of the Silo 3 Project site Preparation Package," dated April 11, 2000.
 - 2) Letter, T. Schneider to J. Reising, "Comments – Silo 3 Site Preparation Package," dated March 31, 2000.
 - 3) Letter, J. Reising to G. Jablonowski and T. Schneider, "Transmittal of Silo 3 Project Site Preparation Package," dated March 2, 2000.

Enclosed for your review and approval is documentation responding to the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) comments on the Silo 3 Project Site Preparation Package originally submitted March 2, 2000 (Reference 3). The draft enclosed comment responses have been informally reviewed by the U.S. EPA and OEPA. The following documents are provided for your review and approval:

- A comment response document providing responses to the U.S. EPA's conditional approval comments (Reference 1), and OEPA's comments (Reference 2);
- A revised Pre-operational Environmental Control Plan;
- Full-sized copies of revised drawings 52-3004, 52-3012, and 52-3013; and
- Revised Rocky Mountain Remediation Services (RMRS) Technical Specifications 02223 and 02485

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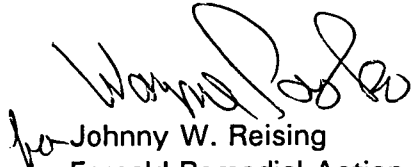
Mr. Gene Jablonowski
Mr. Tom Schneider

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APR 26 2000

If you have any questions, please contact Nina Akgündüz at (513) 648-3110.

Sincerely,


Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Akgündüz

Enclosure

cc w/enclosure:

T. Schneider, OEPA-Dayton (three copies of enclosures)
M. Schupe, HSI GeoTrans
F. Hodge, Tetra Tech
AR Coordinator, Fluor Fernald/78

cc w/o enclosure:

S. Fauver, EM-31/CLOV
N. Akgündüz, OH/FEMP
J. Lorence, OH/FEMP
A. Murphy, OH/FEMP
A. Tanner, OH/FEMP
J. Saric, USEPA-V, SRF-5J
R. Vandegrift, ODH
D. Carr, Fluor Fernald/2
R. Fellman, Fluor Fernald/52-4
T. Hagen, Fluor Fernald/65-2
J. Harmon, Fluor Fernald/90
S. Hinnefeld, Fluor Fernald/31
D. Nixon, Fluor Fernald/52-4
D. Paine, Fluor Fernald/52-4
T. Walsh, Fluor Fernald/65-2
ECDC, Fluor Fernald/52-7

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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

Item	Commentor	Page/Section	Comment	Response
1	OEPA - OFFO	General comment	Paving of areas west of the silos may increase surface water run-off to the surface water containment trench. Will the existing trench provide adequate drainage for increased run-off?	The areas west of the silos are to be gravel over existing ground resulting in a small increase in runoff. The capacity of the existing trench is adequate to provide for this increase.
2	OEPA - DSW	Section 3 Pg. 2 of 5 Line #21-22	Sewage tanks need to have an alarm and be shut down when full.	Will revise as commented.
3	OEPA - OFFO	Pg. 2 Line #37	It is Ohio EPA's preference that in all possible instances bioengineering materials such as coir matting or vegetation be used to replace reliance on rip rap.	Agreed. Wherever possible, the design of storm water runoff and erosion control measures for the Silo 3 project utilizes materials such as coir matting or vegetation to stabilize disturbed areas rather than rock or riprap.
4	OEPA - OFFO	Section 2.2 Pg. 3 Line #31-32	These inspection reports should be made available to Ohio EPA for review upon request.	Agreed. Copies of all storm water and erosion control inspection reports will be retained in both the Silo 3 project files and in the central SWPPP compliance files. Copies of any reports will be made available to OEPA upon request.
5	OEPA - DSW	Attachment A, Section 2.2.2 Pg. 4 of 18 Line #14-28	Check dams should be used in channels that have a design flow equal to or greater than 3 feet per second or as needed.	Concur, text will be modified to clarify this criterion for installation of check dams.
6	OEPA - DSW	Attachment A Section 2.2.2 Pg. #5 of 18 line # 30-33	Silt fence installation as described in this section is not reflected in the drawings. For example, in drawing 52-3012, silt fences are shown crossing contours concentrating water at low points (upper right in detention basin), crossing the silo, etc.	Will revise drawings as commented.

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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

7	OEPA - OFFO	Section 3.4 Page 9 Line #36	This bullet should be revised to state: "During dry conditions or as needed initiating dust control prior to start of shift and <i>continuing throughout the day as needed to minimize fugitive dust emissions</i> " Note: <i>italics added to denote change from original wording.</i>	Concur; text will be modified as suggested.
8	OEPA - OFFO	Section 4.0 General comments	This Waste Management Plan designates several stockpiles for the different waste types but does not specifically indicate where these stockpiles will be located. Due to the limitations on space in the silos area, prior planning for locating potential stockpile should be included in the Waste Management Plan.	The Waste Management Plan section of the Pre-Operational Environmental Control plan has been rewritten to clarify plans for management and disposal of excess soil. After categorization by Waste Acceptance Organization (WAO) field personnel, "meets-WAC" excess soil will be staged in separate piles within the Temporary Excess Soil Staging Area north of the High Nitrate Tank. Any above-WAC soil will be transported to SP-7.
9	OEPA - OFFO	Section 4.4 Pg. 15	This section fails to refer to the WAC Attainment Plan or Sitewide Excavation Plan or to address the requirements of these documents for soils excavation for disposition to the OSDF. Requirements that will need to be met include WAO oversight of excavation, manifesting of shipments, and categorization of loads to meet OSDF categories. The section should be revised to address WAC Attainment compliance.	Agreed. The Waste Management Plan section of the Pre-Operational Environmental Control plan has been rewritten to clarify plans for management and disposal of excess soil, including additional detail on the specific issues addressed in this comment.
10	OEPA - OFFO	Section 4.4 Pg. 16 Line 7-9	It would appear this section is discussing debris free-release, since no FEMP soils are to be free-released. Additional clarification is needed since debris is being discussed in the soils section.	Agreed. The mention of surveying for free release has been deleted from the soil management section.

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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

11	OEPA - OFFO	Section 4.4 Pg. 16	All efforts should be made to prevent the stockpiling of above WAC soils. If all other efforts fail, above WAC stockpiles must have liner material placed below them and a tarp on top.	Agreed. The Waste Management Plan section of the Pre-Operational Environmental Control plan has been rewritten to clarify plans for management and disposal of excess soil. Any above-WAC soil will be transported to SP-7.
12	OEPA - OFFO	Drawing 52-3012	The lower left figure appears to show silt fence running through silo 3. The drawing should be revised to show silt fence properly installed along the contours.	Will revise as commented.
13	OEPA - OFFO	Drawing 52-3012	The addition of a legend to the figure showing the various symbols and definitions would be helpful.	Will add legend.
14	OEPA - OFFO	Drawing 52-3013	Cross section A should show silt fence installed at the vegetated slope.	Will revise as commented.
15	OEPA - OFFO	Drawing 52-3013	Ensuring good drainage across the storage pad is paramount. It will not be acceptable to store loaded waste containers in standing water.	Agreed. The ISA Pad has been designed to drain into new catch basins which will drain to the existing detention basin north of the pad. Drainage calculations demonstrate that the capacity of the drainage system is sufficient to ensure that standing water will not accumulate on the pad during storm events. In addition, the design calls for the loaded containers to be stored on pallets to provide further protection from contact with water on the pad.

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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

16	OEPA - OFFO	Drawing 52-3013	Ohio EPA is taking this opportunity again to state that this storage pad as designed will not be an acceptable replacement for the Plant 1 Storage Pad. DOE had previously suggested this may be used in the future as a replacement for Plant 1 storage this will not be acceptable.	<p>The storage pad is being constructed for interim storage of stabilized Silo 3 material pending shipment to the disposal facility. The design meets all substantive requirements of RCRA and other ARARs for storage of wastes not containing free liquids.</p> <p>The only identified use of the pad after completion of the Silo 3 project would be for potential storage of solid wastes currently stored on the Plant 1 Pad.</p> <p>It is recognized that other future uses for the pad, such as storage of liquid wastes, would require either modification of the pad, or installation of temporary secondary containment. Any such use of the pad, and the necessary modifications, would be reviewed in advance by OEPA and U.S. EPA.</p>
17	OEPA - OFFO	Drawing 52-3211	Section D. Though not specifically noted on the drawing, Ohio EPA assumes the black squares are required water stops within the sumps. The figure should be clarified to ensure the builder knows that water stops are necessary within all sump construction	The black squares do indicate water stops. Will clarify the callout on the drawing. This drawing will be re-submitted as part of the Remedial Design Package.
18	OEPA - OFFO	Appendix A Temporary Diversion	Ohio EPA has observed that in most cases matting is necessary to establish vegetation on nearly all slopes at Fernald. Additionally, in most cases matting is sufficient for all but the steepest slopes and the engineered slope stabilization is seldom necessary.	Concur; sloped areas will be stabilized by seeding and matting in accordance with Specification 02900.

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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

19	OEPA - OFFO	Attachment C	It is unclear from these technical specifications the role of the Fluor Fernald Construction Manager. The specification we are familiar with specifically require approval of the FF Construction Manager prior to any change or deviation from the specs or plans. Additional clarification of who the "Contractor" and subcontractor being referred to in the specs is also necessary.	Contractor represents RMRS and Subcontractor represents their selected installation subcontractors, as defined in Specification Section 02001 Site Work General Provisions.
20	OEPA - OFFO	Spec 02223 Pg. 3	The text refers to spec 02935. This specification does not exist in the package submitted to Ohio EPA.	Text revised to reference Specification Section 02900, Seeding.
21	OEPA - OFFO	Spec 02485,3.2(A)	The text refers to spec 02200. This specification does not exist in the package submitted to Ohio EPA.	Text revised to reference Specification Section 02210.
22	OEPA - DSW	Section 02485 Pg. 2 Of 7 Line G	"The blanket sha;; have" should read" the blanket shall have"	Will revise as commented.
23	OEPA - OFFO	Spec 02900,2.1 Pg. 3	Ohio EPA understands the site-wide seeding specification is being revised to change the species planted and the rates. The specification should be revised to incorporate the new seeding spec. Ohio EPA recommends contacting Fluor Fernald's Natural Resources group.	Silo 3 Project has discussed seeding requirements with the Fluor Fernald Inc. Natural Resources Group. Although the seeding specification is in the process of being revised as stated in Ohio EPA's comment, the new seed mixtures and other changes have not yet been finalized. The necessary changes will be incorporated into the Seeding Specification for the Silo 3 project as soon as they are finalized.
24	OEPA - DSW	Attachment E	Office trailers with sanitary facilities should be tied in to the site sanitary waste system. If this is not possible, temporary holding tanks can be used if alarmed, shut down when full, and pumped out routinely	Based on the location of the restroom trailer for the Silo 3 project, a self-contained holding tank is necessary. The tank will be equipped with the necessary alarms and shutdown as stated.

RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

25	USEPA REGION V, General Comment 1	Attachment B	Some of the drawings included in this package are difficult to read and new work to be completed under this package is not clearly shown. For example, it is difficult to determine the new grading when elevation contours are shown at 577 plus feet but the spot elevations are indicated as 77.1 feet. The drawings should be revised to show the new work to be completed by heavier lines or other means.	Detail has been added to the full-sized drawings provided with the Site Preparation Package to more clearly identify existing and proposed conditions. On Drawing 52-3004, existing contours and elevations are reflected by light lines, while new work, proposed contours and elevations and final grades are reflected by heavy lines. A legend has also been added to the appropriate drawings clarify these conditions.
26	USEPA REGION V, Specific Comment 1	Drawing 52-3003	The drawing shows the stormwater sewer plan and profiles. A number of catch basins are shown on the three stormwater sewers on the plan; however, the profiles clearly indicate that these are not catch basins but manholes. A catch basin typically has a 2-foot sump below the invert elevation at the outlet sewer. This sump is for "catching" sediment and debris that enters the stormwater sewer system. The profiles should be revised to clearly indicate catch basins and not manholes.	The catch basins to be installed at and around the ISA Pad are proposed to be constructed per Ohio Department of Transportation Standard Detail CB-1.1 (Type 2-2b). This catch basin design does not specify the construction of a sediment trap sump. Runoff of sediment/debris into the stormsewers is proposed to be mitigated by the use of silt fencing at the pad perimeter to prevent sediment/debris transport onto the pad, and by the use of silt fence inlet protection for all catch basins outside of the ISA Pad. In addition, the storm sewer lines in question discharge to existing sediment basins.

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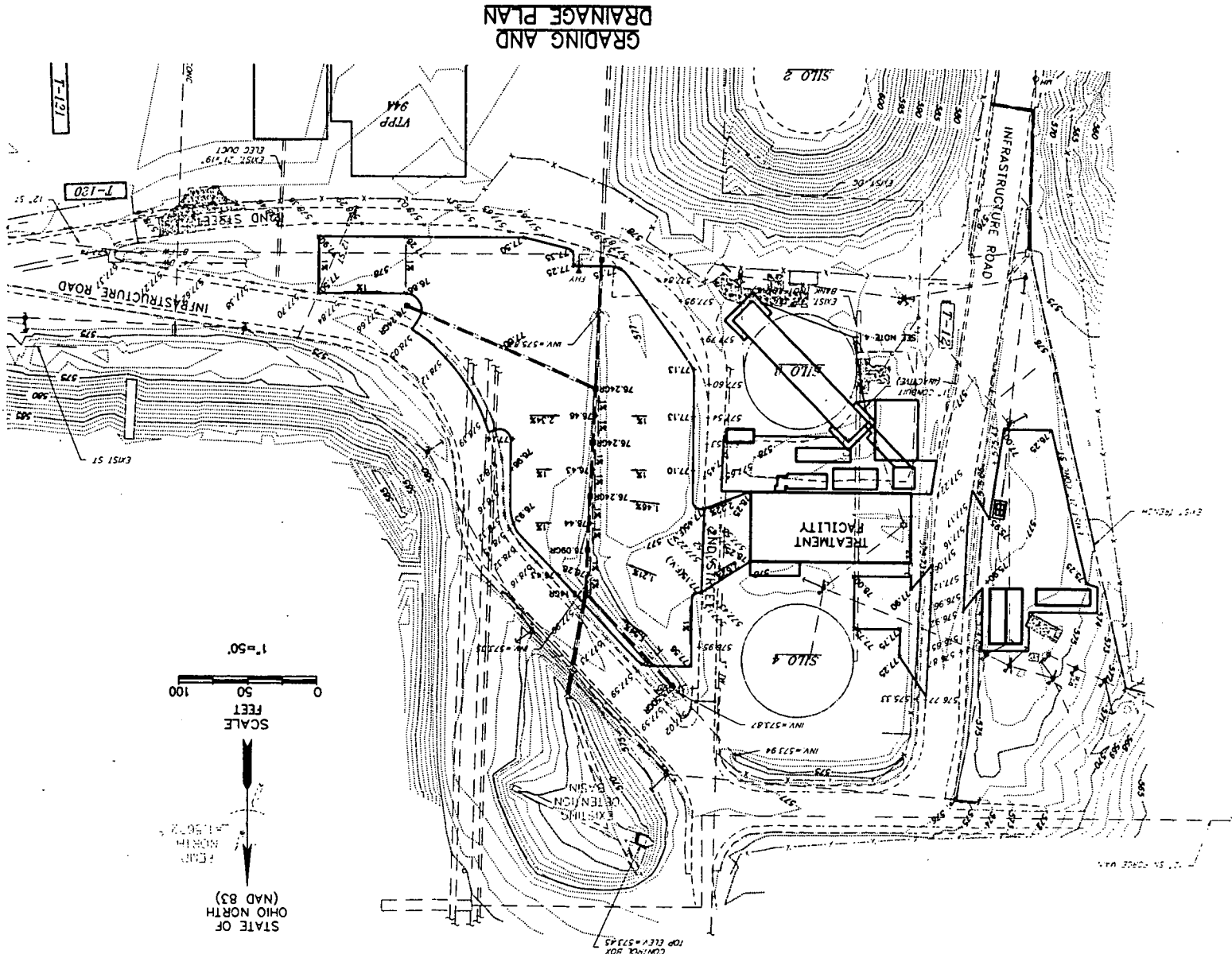
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RESPONSES TO OHIO EPA AND U.S. EPA COMMENTS ON SILO 3 PROJECT 100% SITE PREPARATION PACKAGE

27	USEPA REGION V, Specific Comment 2	Drawing 52-3013	<p>The drawing shows the construction of a concrete slab for the interim storage area, which has a number of stormwater inlets. It is not clear from this drawing how the stormwater sewer will be protected from spills of contaminated waste, soil, or other materials if an accident occurs. Typically, storage areas for hazardous waste materials are contained to prevent any potential contaminant migration off site into surface water. This design should be revised and modified to show such containment.</p>	<p>The ISA pad is designed for storage of treated Silo 3 material awaiting shipment to the disposal facility. No liquids, nor waste containing free liquids will be stored on the pad. Therefore, secondary containment (curbing, etc.) is not required so long as the containers are protected from contact with accumulated precipitation (OAC 3745-55-75(C)).</p> <p>The design of the pad will prevent any liquids spilled on the pad from migrating to off-site surface water. Precipitation or other liquid on the pad will drain to a storm sewer line discharging to the retention basin north of the pad. This retention basin discharges to the Waste Pit Area Stormwater Runoff Control Sump Northwest of Silo 4. Contaminated stormwater runoff from the Silos and waste pit areas collected in this sump is treated through the FEMP wastewater treatment system prior to discharge.</p>

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LEGEND	
EXISTING INTERMEDIATE CONTOUR (LABELLED WHERE APPROPRIATE FOR CLARITY)	—570—
EXISTING INDEX CONTOUR	—578.00—
EXISTING SPOT ELEVATION	+578.00
PROPOSED SPOT ELEVATION (FINAL GRADE)	+78.48
PROPOSED SPOT ELEVATION (GRADE ELEVATION)	+78.2408
PROPOSED SPOT ELEVATION (FIELD VERIFY)	+77.156(F.V.)

REFERENCE DRAWINGS	
DRAWING NO.	52-3001
TITLE	GENERAL NOTES - CIVIL
	52-3002
	CIVIL SITE PLAN

NOTES

1. PROPOSED AND EXISTING SPOT ELEVATIONS REPRESENT FINAL GRADE UNLESS NOTED OTHERWISE.

2. SURFACE RUNOFF FROM THE INFRASTRUCTURE ROAD AND 2ND STREET WILL DRAIN TO THE ISA PAD, WHERE IT WILL BE COLLECTED BY THE PROPOSED CATCH BASINS.

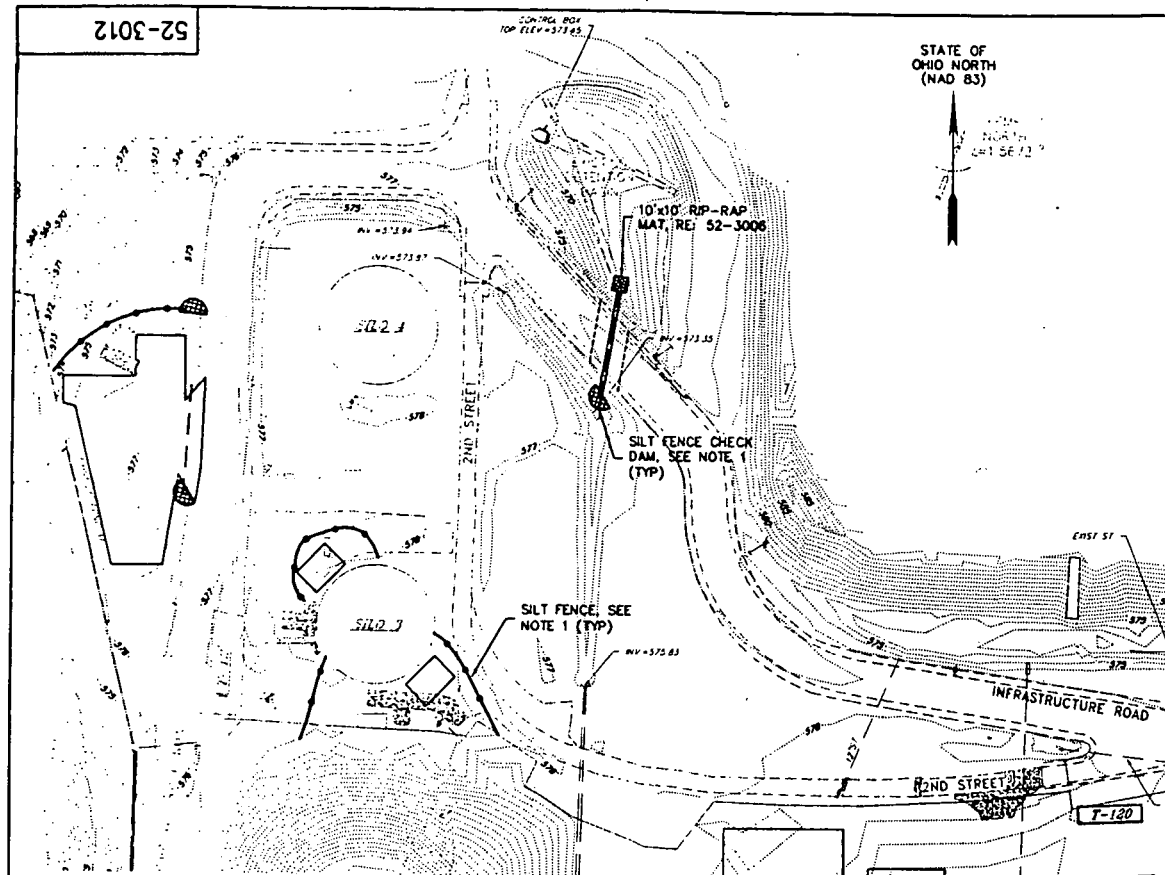
3. FINAL GRADE SLOPES WITHIN THE ISA AREA VARY IN ORDER TO MATCH EXISTING ELEVATIONS AND TO FACILITATE DRAINAGE FLOWS.

4. FINISHED GRADE ELEVATION OVER GANTRY FOUNDATIONS SHALL BE 578'-3.7", IN COORDINATION WITH SECTION A ON DRAWING 52-3111.

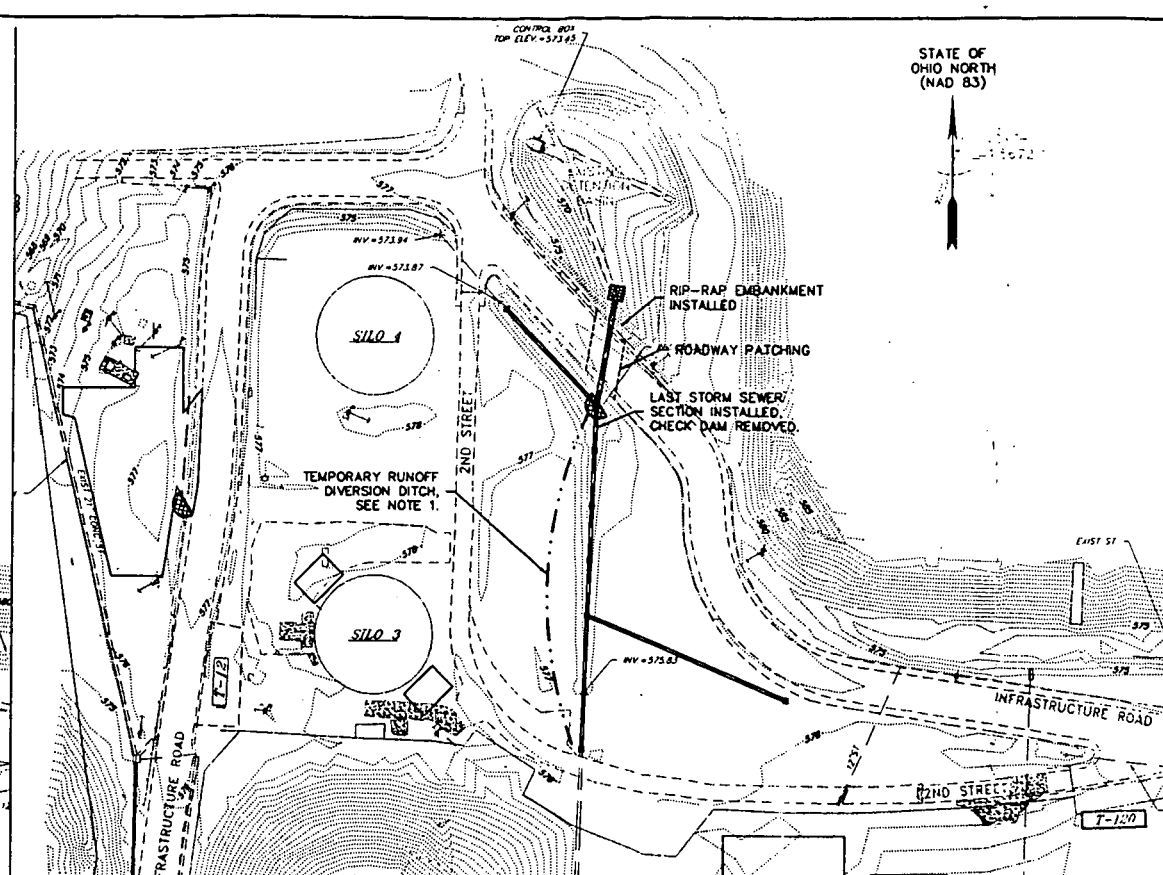
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C	02/25/00	MM		INCORPORATE FOR REVIEW COMMENTS
B	02/18/00	MM		100% SITE PREP. DESIGN PACKAGE
A	11/30/99	MM		50% SITE PREP. DESIGN PACKAGE

SIL0 3 PROJECT
FEMP
GRADING AND DRAINAGE PLAN

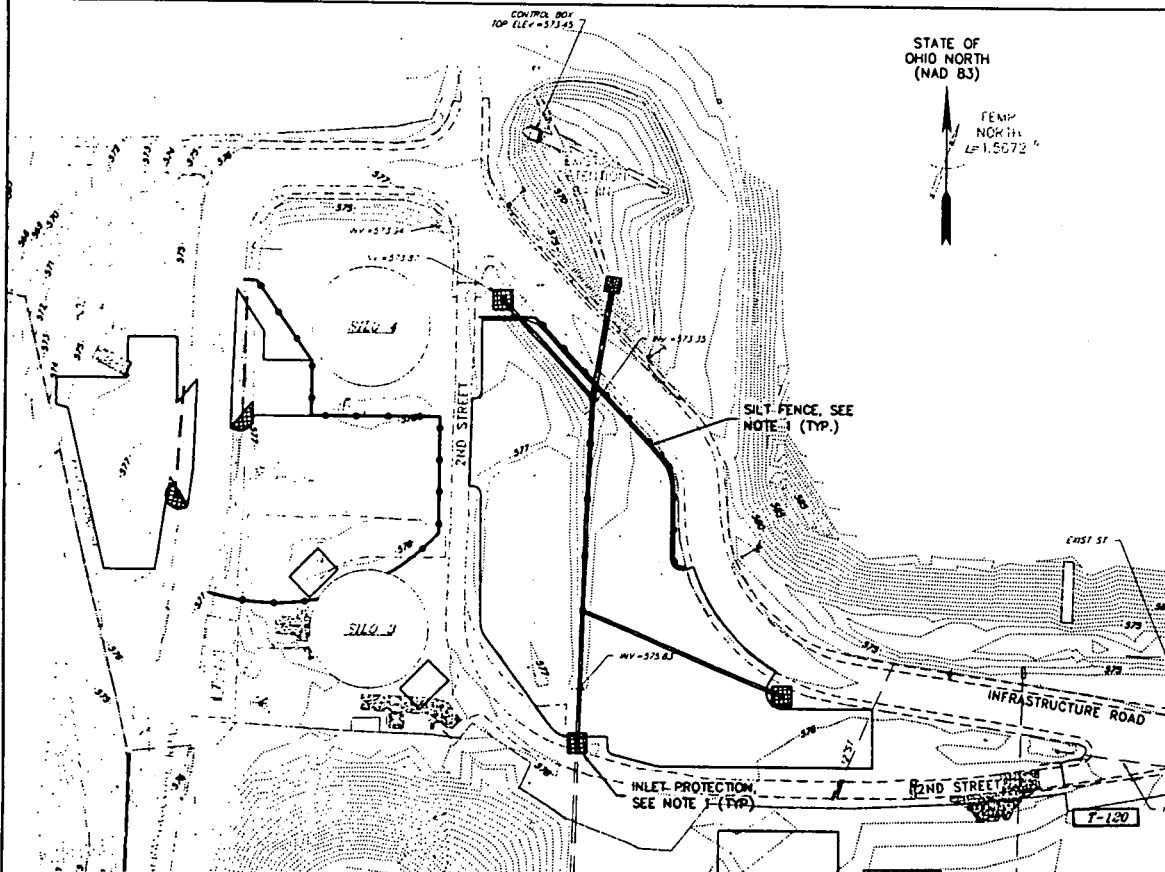
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DATE: 11/29/99	CHECKED: MCK
DATE: 11/29/99	VERIFIED: MCK
DATE: 11/29/99	APPROVED: MCK
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DRAWING NUMBER: 52-3004	
REV: 0	PLOTTED BY: 0000010



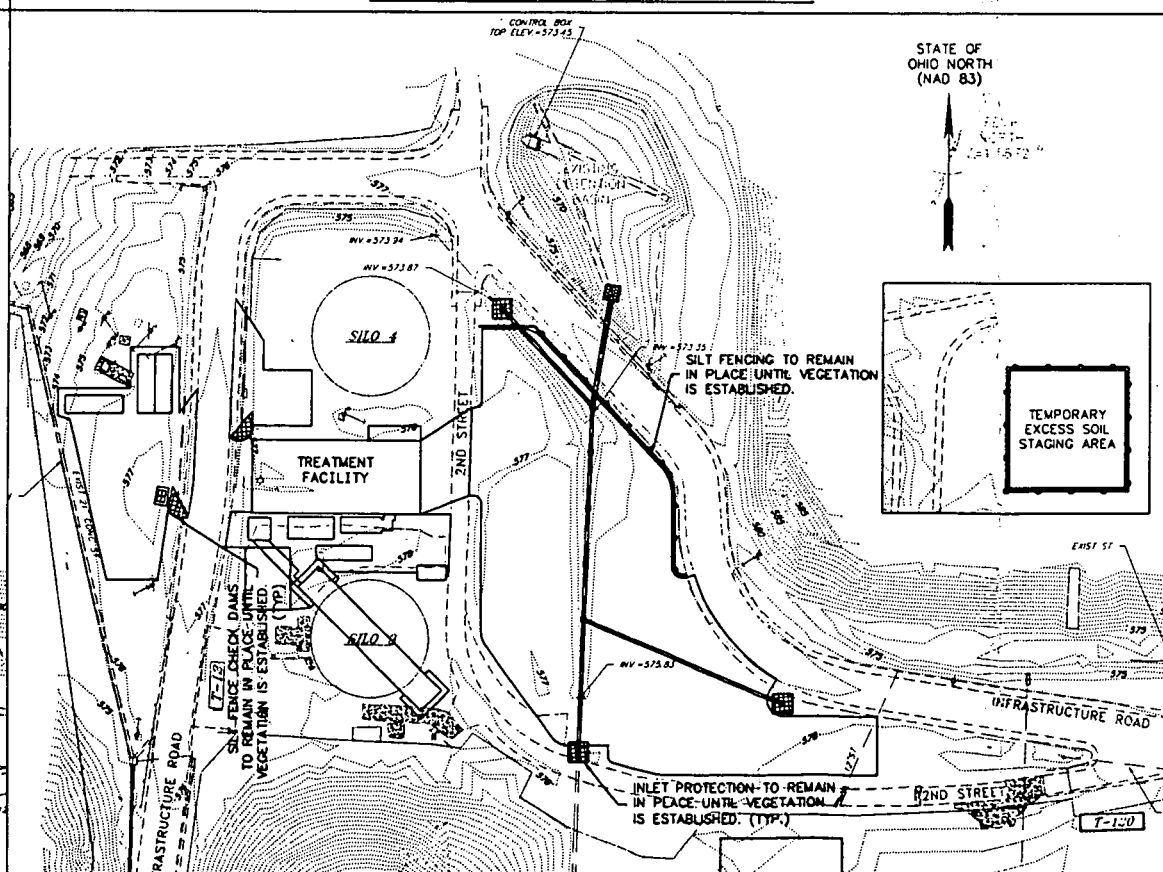
30' CULVERT CROSSING/GANTRY FOUNDATIONS/LAYDOWN-TRAILER AREA



UNDERGROUND UTILITY INSTALLATION



ISA PAD INSTALLATION/TREATMENT FACILITY GRADING



FACILITY CONSTRUCTION

REFERENCE DRAWINGS

DRAWING NO.	TITLE
52-3001	GENERAL NOTES - CIVIL
52-3002	CIVIL SITE PLAN
52-3003	STORM SEWER PLAN AND PROFILE
52-3004	GRADING AND DRAINAGE PLAN

NOTES

1. RE: "RAINWATER AND LAND DEVELOPMENT", OHIO'S STANDARDS FOR STORMWATER MANAGEMENT, ODNH-LAND DEVELOPMENT AND URBAN STREAM PROTECTION FOR INLET PROTECTION, DITCH CHECK, DIVERSION DITCH, AND SILT FENCE INSTALLATION DETAILS.

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LEGEND

- SILT FENCE CHECK DAM
- RIP-RAP MAT
- INLET PROTECTION
- SILT FENCE

D	04/20/00	MCK/MW	ISSUED FOR CONSTRUCTION	
C	02/25/00	MCK	INCORPORATE FDF REVIEW COMMENTS	
B	02/18/00	MCK/MW	100% SITE PREP. DESIGN PACKAGE	
A	11/30/99	MCK/MW	50% SITE PREP. DESIGN PACKAGE	
REV	DATE	BY	CHKD	DESCRIPTION

SILO 3 PROJECT
FEMPEROSION CONTROL
PLAN

RMRS
Randy M. Rasmussen
Environmental Services, LLC
-protecting the environment-

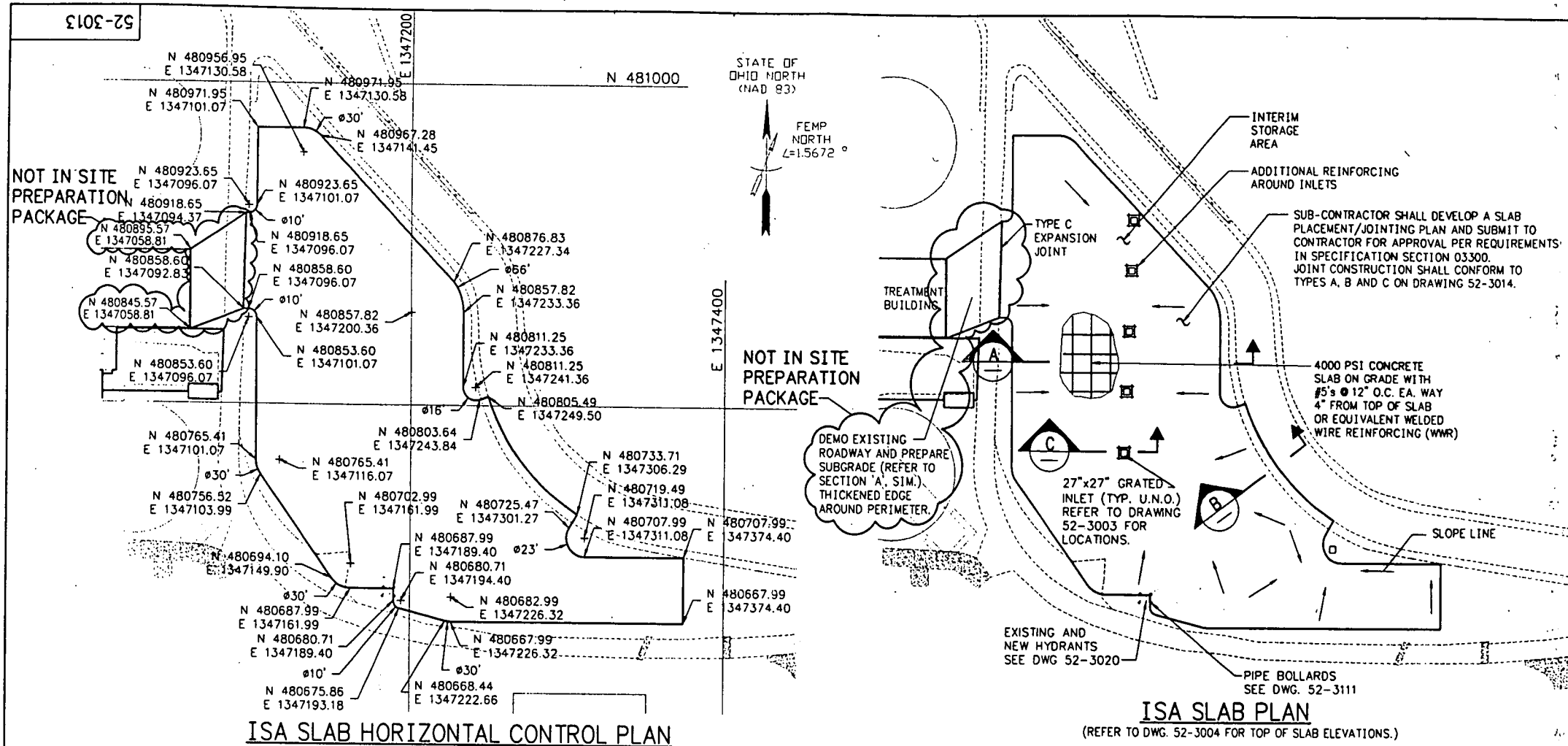
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APPROVED: MCK	DATE: 11/29/99
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PLOTTED BY:

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52-3013



REFERENCE DRAWINGS

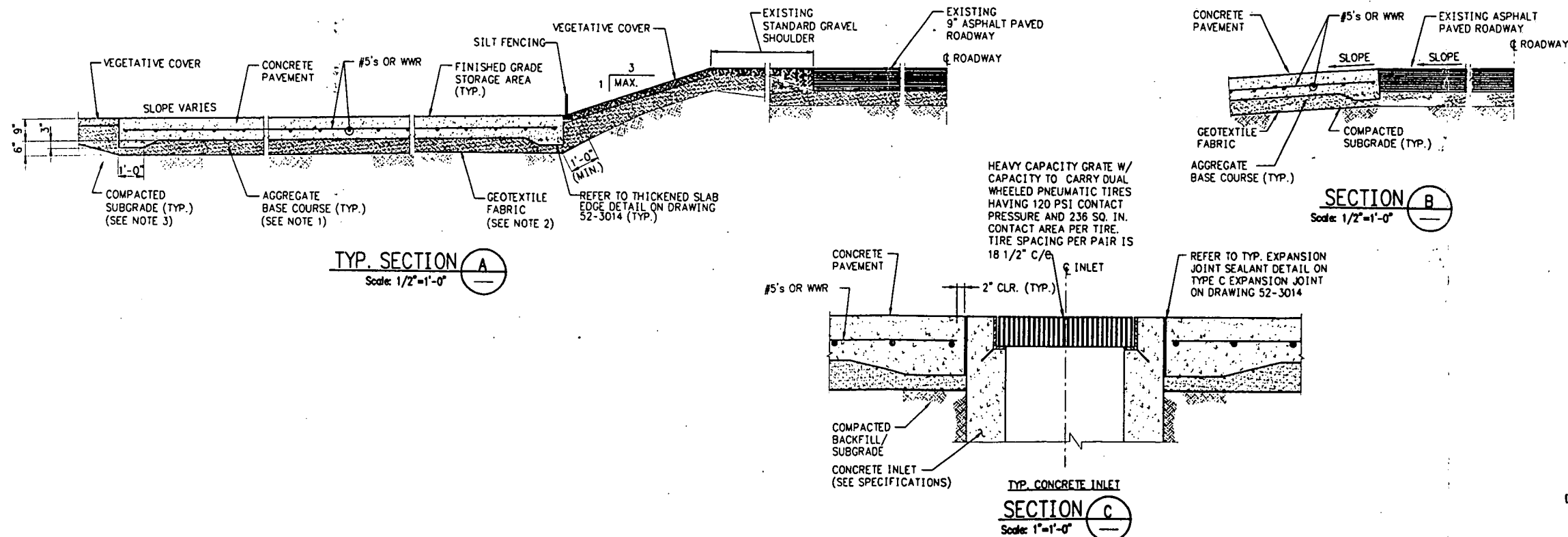
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52-3014	ISA PAVEMENT DETAILS
52-3003	STORM SEWER PLAN & PROFILE
52-3020	UNDERGROUND UTILITIES PLAN
52-3004	GRADING & DRAINAGE PLAN

NOTES

1. AGGREGATE BASE COURSE SHALL CONFORM TO OHIO DEPARTMENT OF TRANSPORTATION, ODOT, ITEM 304.
2. GEOTEXTILE FABRIC SHALL CONFORM TO ODOT ITEM 712.09, TYPE B.
3. SUBGRADE SHALL BE EXCAVATED A MINIMUM OF 6\"

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ISA SLAB HORIZONTAL CONTROL PLAN

ISA SLAB PLAN
(REFER TO DWG. 52-3004 FOR TOP OF SLAB ELEVATIONS.)

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REV	DATE	BY	CHKD	DESCRIPTION
0	04/20/00	JW	MA	ISSUED FOR CONSTRUCTION
C	02/25/00	JW	MA	INCORPORATE PDF REVIEW COMMENTS
B	02/18/00	JW	MA	100% SITE PREPARATION PACKAGE
A	11/30/99	JW	MA	50% SITE PREPARATION PACKAGE

SILO 3 PROJECT
FEMPISA - PAVEMENT
PLAN & SECTIONS

SCALE: 1\"	DATE: 11/03/99
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DESIGNED: A. WEBER	DATE: 02/14/00
CHECKED: M. JURGENSEN	DATE:
VERIFIED:	DATE:
APPROVED: [Signature]	DATE: 11/03/99
CADD FILE NAME: 523013.dwg	
0-LEVEL (FAD)	
DRAWING NUMBER: 52-3013	REV 0

PLOTTED BY: CPO: 04/20/00 [TIME: 1:45 PM]



Rocky Mountain
Remediation Services, L.L.C.
... protecting the environment

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SPECIFICATION TITLE SHEET

This sheet is a record of each issue or revision to the subject specification.

The exact sheets changed and the nature of the change should be noted under "Remarks." These remarks are not a part of the specification. The revised sheets become part of the original document and shall be complied with in their entirety.

Rev. Issue Date	Originator	Checked By	APPROVAL				REMARKS
			Project Engineer	QA Lead	Safety Basis Lead	Project Manager	
02/18/00 Rev. A	MK	VH					
02/25/00 Rev. B	MK						
04/20/00 Rev. 0	MK <i>M. Kamm</i>	MN <i>MN</i>	<i>[Signature]</i>	<i>Full consent</i>	<i>[Signature]</i>	<i>SLC [Signature]</i>	Issue for Construction

Q-List Items Specified in this Section:

Item No.	Description	Q-Level
		N/A

Client, Project, Location	Work Order	Specification Title/Description
FLUOR FERNALD, INC. FERNALD SILO 3 PROJECT DOE FERNALD, OHIO	RMR-0445	VEGETATIVE LAYER
	Specification 02223	

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SECTION 02223

VEGETATIVE LAYER

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Remediation Services, LLC.
... protecting the environment

Vegetative Layer
Spec. Section: 02223
Revision: 0

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SECTION 02223

VEGETATIVE LAYER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section covers requirements for constructing the vegetative layer.
- B. The work includes furnishing of all equipment, labor, materials and supplies to complete the work to the lines and grades shown on the Project Drawings and to the requirements specified herein.

1.2 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. ASTM - American Society For Testing And Materials
 - ASTM D422 - Particle-Size Analysis of Soils
 - ASTM D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - ASTM D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- C. USDA - United States Department of Agriculture
 - Soil Survey Methods Manual, Soil Survey Investigation Report No. 42

1.3 RELATED SECTIONS

- A. Section 02001 - Site Work General Provisions
- B. Section 02005 - Surveying Services
- C. Section 02935 - Seeding
- D. Section 01010 - Summary of Work



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- E. Section 01300A - Submittal Procedures – Construction
- F. Section 01340 - Shop and Working Drawings, Product Data and Samples
- G. Section 01630 - Substitutions
- H. Section 01720 - Project Record Documents

1.4 EQUIPMENT

- A. Equipment and compaction procedures shall be approved by the Contractor.

1.5 SUBMITTALS

- A. The following items shall be submitted:
 - 1. Drawings
 - a. Finished Grades
 - b. Cross-sections of finished grades.
 - c. As-Built Survey (Article 3.5 of this Specification)
 - 2. Reports:
 - a. Soil testing shall include analyses of the following:
 - (1) Soil pH (vegetative layer soil)
 - (2) Soil conductivity (vegetative layer soil)
 - (3) Sodium absorption ratio (vegetative layer soil)
 - (4) Organic content (vegetative layer soil)
 - (5) Nitrogen, phosphorous, and potassium levels (vegetative layer soil)

PART 2 PRODUCTS

2.1 SUITABLE VEGETATIVE LAYER MATERIAL

- A. Suitable vegetative layer material is defined as material that is reasonably free of clay lumps, objectionable weeds, litter, brush, matted roots, toxic substances, or any material that might be harmful to plant growth or be a hindrance to grading, planting, or maintenance operations. Vegetative layer materials shall consist of soils which classify as SM, SC, SC-SM, ML, CL or CL-ML in accordance with ASTM D2487. Vegetative layer material shall not contain particles which exceed 1 inch in any dimension. In addition, the Subcontractor shall amend the vegetative layer material to meet the following criteria:
 - 1. Soil pH shall be between 6.5 and 8.5.
 - 2. Organic content shall be between 0.75 and 1.0 percent by weight in the upper 6 inches of soil
 - 3. Soil conductivity shall be less than 4m Mhos/cm

4. Sodium adsorption ratio shall be less than 15.

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2.2 PROCUREMENT OF BORROW MATERIAL

- A. Subcontractor shall obtain required vegetative layer borrow materials from sources designated by the Contractor. Subcontractor shall comply with all federal, state, local and site requirements for excavation and reclamation of borrow sources.

PART 3 EXECUTION

3.1 PLACEMENT OF VEGETATIVE LAYER

- A. General Requirements: The vegetative layer shall be placed at the locations and to the lines and grades shown on the Project Drawings.
- B. Vegetative Layer Placement: Vegetative layer material shall be uniformly distributed over the designated areas and evenly spread to a minimum thickness of 6 inches. Spreading shall be performed to allow planting to proceed with little additional soil preparation or tillage. The surface resulting from the placement of this layer shall meet the finish surface requirements in Article 3.3. Vegetative layer material shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to proper grading or the proposed planting. Previously constructed random fill grades shall be repaired, if necessary, so that the vegetative layer is placed to conform to the cross-sections indicated on the Drawings upon completion of placement. Vegetative layer soil shall be disked, scarified, or plowed to a depth of 6 inches prior to seeding. Organic matter shall be incorporated into the upper 6 inches of the vegetative layer. Reference Section 02900 Seeding for acceptable organic materials to be incorporated into the vegetative layer soil. There shall be no specific compaction requirements for the vegetative soil layer except that the vegetative soil layer shall be compacted with one pass of the placement equipment.

3.2 TESTS AND CONTROL

- A. Sampling and Testing: Quality control sampling and testing shall be performed by the Subcontractor as specified herein.
1. Classification Determinations: Representative samples of soil material proposed for use in vegetative layers shall be obtained for each principal type of material or combination of materials. Samples shall be tested for Atterberg limits and grain size determination (sieve analysis) in accordance with ASTM D4318, and ASTM D422, respectively. Soil classification shall be in accordance with ASTM D2487. Classification testing shall be done at a rate of one test per 2,000 cubic yards of borrow material for the vegetative layer.

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3.3 FINISHED GRADES

- A. All areas, including filled sections and adjacent transition areas, shall be uniformly smooth graded. The completed surface shall be reasonably smooth and be free from irregular surface changes. The degree of finish shall be that ordinarily obtained from either blade grader or scraper operations, except as otherwise specified. The completed surface shall be not more than 0.2 foot above the established grade or approved cross-section and shall be free of depressed areas where water would pond. No minus tolerances in completed thickness of the vegetative layer shall be permitted. All areas shall be graded to drain readily.

3.4 PROTECTION

- A. Where ruts occur in the completed fill, the fill shall be brought to grade, reshaped if required, and recompact prior to the placing of additional fill. Storage or stockpiling of material on completed fill will not be permitted.

3.5 AS-BUILT SURVEY

- A. Subcontractor shall complete an as-built survey of the top of the vegetative layer. All survey data shall be submitted to the Contractor for approval prior to construction of any permanent features above the vegetative layer. Reference Section 02005 Surveying Services for requirements.

END OF SECTION



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SPECIFICATION TITLE SHEET

This sheet is a record of each issue or revision to the subject specification.

The exact sheets changed and the nature of the change should be noted under "Remarks." These remarks are not a part of the specification. The revised sheets become part of the original document and shall be complied with in their entirety.

Rev. Issue Date	Originator	Checked By	APPROVAL				REMARKS
			Project Engineer	QA Lead	Safety Basis Lead	Project Manager	
02/18/00 Rev. A	MK	VH					
02/25/00 Rev. B	MK						
04/20/00 Rev. 0	MK <i>M. Kan</i>	MN <i>MN</i>	<i>Rob</i>	<i>for</i>	<i>longest</i>	<i>SLG</i>	Issued For Construction

Q-List Items Specified in this Section:

Item No.	Description	Q-Level
		N/A

Client, Project, Location	Work Order	Specification Title/Description
FLUOR FERNALD, INC. FERNALD SILO 3 PROJECT DOE FERNALD, OHIO	RMR-0445	SOIL EROSION AND SEDIMENTATION CONTROL
	Specification 02485	



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SECTION 02485

SOIL EROSION AND SEDIMENTATION CONTROL

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SECTION 02485

SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. The Subcontractor shall furnish all labor, material, equipment, tools and appurtenances required to minimize soil erosion and to provide sediment control.

1.2 RELATED SECTIONS

- A. Section 02001 – Site Work General Provisions
- B. Section 02210 - Earthwork/Grading
- C. Section 02900 – Seeding
- D. Section 01010 - Summary of Work
- E. Section 01300A - Submittal Procedures – Construction
- F. Section 01340 - Shop and Working Drawings, Product Data and Samples
- G. Section 01630 – Substitutions
- H. Section 01720 - Project Record Documents

1.3 REFERENCE STANDARDS AND PUBLICATIONS

- A. Guidelines for erosion and sediment control, planning and implementation, USEPA.
- B. State of Ohio, Department of Natural Resources (ODNR): Rainwater and Land Development, Ohio Standards for Storm water Management, Land Development and Urban Stream Protection, 1996

1.4 QUALITY ASSURANCE PROGRAM

- A. Subcontractor shall inspect and evaluate the effectiveness of, and the need for maintenance of, the control measures. Any repairs to the erosion and sediment



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control measures shall be corrected within 24 hours of problem discovery.
Inspections shall occur, at a minimum, at the following frequencies by a qualified representative of the Contractor:

1. Weekly;
 2. Daily after each rain exceeding 0.5 inches at the Fernald Environmental Management Project (FEMP).
 3. At least daily during prolonged rainfall events at the FEMP.
- B. All inspections shall be conducted and documented in accordance with this Section. The Contractor shall maintain a copy of the inspection records on site with the original submitted as specified in this Section.
- C. The inspection report shall summarize the scope of the inspection, name of the inspector(s) inspection date, observations relating to the implementation of the erosion and sediment control measures, frequency; duration, destination of pumping ponded water, estimated quantity of ponded water and corrective action measures, if any are required. The report shall indicate if any areas are not in compliance or contain a certification that control measures are effective and in compliance with the Section.

1.5 SUBMITTALS

- A. For each product proposed for use, Manufacturer's data, and recommended methods of installation and maintenance shall be submitted.
- B. Subcontractor's records of erosion and sediment control inspections, as described in Section 1.4. shall be submitted on a weekly basis.
- C. MSDS, if applicable.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fill: Fill required for soil erosion and sedimentation control and temporary drainage shall conform to requirements specified in Section 02210 - Earthwork/Grading.
- B. Other Materials: Submittals shall be required by the Contractor for other materials used for soil erosion and sedimentation control. These submittals shall include the manufacturer's product data indicating the material description and performance data for the intended function. The Subcontractor may use materials for soil erosion and sedimentation control which are not specified herein provided they meet the requirements of the ODNR Rainwater and Land Development Manual, and are approved in advance by the Contractor.



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- C. **Stakes:** Stakes used with staples to fasten the matting. Stakes shall be a minimum of 18 inches in height and 2 inches by 2 inches or more in depth and width and made from hardwood. Use 50 stakes per matting panel facing upstream at a 45° angle.
- D. **Silt Fence:** Materials shall be as specified in ODNr's Rainwater and Land Development and the construction drawings.
- E. **Dumped Rock Fill:** Dumped rock fill used for channel protection shall meet the requirements of *ODOT Item 601.07* for type specified on drawings.
- F. **Non-woven geotechnical fabric** used as a separator beneath dumped rock fill shall conform to *ODOT Item 712.09*, Type B.
- G. **Erosion Control Blankets (Matting):** The matting shall be made from 100% commercial grade Coir yarn (spun from coconut fibers) containing approximately 45% Lignin, 55% cellulose. The erosion control blanket shall be 100% biodegradable with a maximum service life expectancy of 10 years for use on slopes of 1:1 or greater and where shown on the drawings. The blanket shall have the following physical properties.
1. **Material Content**
 - a. **Coir Yarn:** 100 percent; containing 45% Lignin, 55% Cellulose (approx.)
 2. **Physical Specifications (Roll)**
 - a. **Weight:** 83.6 lbs; 22.7 oz/sq. yd (approx).
 - b. **Average Mesh:** 0.4" x 0.5"
 - c. **Open Area:** 38% (approx)
 - d. **Tensile Strength:** 1350 lb/ft x 626 lb/ft – Fabric
55 lb dry, 49 lb wet – Yarn
 - e. **Elongation:** 34% x 38% - Fabric
29% dry, 35% wet – Yarn
- H. **Staples:** Staples and wood stakes used to fasten the matting. Staples shall be made from 0.3 m (12-inch) lengths of No. 8 gage steel wire bent into narrow "U" shape with the ends of the staples approximately 25 mm (1 inch) apart. For clay, shale, and other heavy soils, a 75 mm (3 inch) steel staple, at least 9 gage with points approximately 25 mm (1 inch) apart will be used as may be required by the Engineer.
- I. **Seed and mulching materials** shall be as specified in *Section 02900*.
- J. **Crusting agent** shall be as approved by the Contractor and shall meet the



following requirements:

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1. The dust suppression/crusting agent shall be a pine sap emulsion comprised of 100% organic emulsion produced from naturally occurring resins (pine sap). The dust suppression/crusting agent must provide dust suppression and surface stability for exposed soils, both disturbed and undisturbed soils. The dust suppression/crusting agent shall be compatible with application via a hydro seeder, and must not require intense cleaning of equipment after application. Once cured, the dust suppression/crusting agent shall be non-tracking (i.e., will not stick to boots or tires).
2. The dust suppression/crusting agent shall not have hazardous characteristics or ignitability, corrosivity, reactivity, or toxicity as defined in *40 CFR 261* for a hazardous waste in either its pre-applied or cured states.
3. The dust suppression/crusting agent shall have a flash point greater than 200° F. The dust suppression/crusting agent shall be neither a flammable nor combustible liquid per DOT definition. The dust suppression/crusting agent must not be susceptible to significant deterioration from exposure to the elements, including sunlight.
4. Seeding shall be in accordance with *Section 02900*. Contractor's prior approval must be given to substitute similar products.

PART 3 EXECUTION

3.1 FIELD CONDITIONS

A. Silt Fences

1. Install in accordance with ODNr and manufacturer's recommendations. Place at locations shown on drawings prior to start of earthwork.
2. Silt fence shall be constructed before up slope land disturbance begins.
3. All silt fence shall be placed as close to the contour as possible so that water will not concentrate as low points in the fence and so that small swales or depressions which may carry small concentrated flows to the silt fence are dissipated along its lengths.
4. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed up slope so that the ends are at a higher elevation.
5. The minimum height of the silt fence shall be a 16 inches above the original ground surface.
6. Seams between section of silt fence shall be overlapped with the end staked



of each section wrapped together before driving into the ground. 2936

B. Erosion Control Blankets (Matting)

1. Install in accordance with ODNR and manufacturer's recommendations. All blankets shall be properly anchored with wire staples and wood stakes in patterns and sizes recommended by manufacturer. Bury edges in 6 inches deep trench, rake area smooth, and seed.
2. Erosion control blanket shall be used on all slopes steeper than 4H:1V and at all ditch inverts, to a ditch depth of 1 foot.

C. Check Dam

1. The check dam shall be constructed of 4 to 8 inch diameter stone, place so that it completely covers the width of the channel.
2. The top of the check dam shall be constructed so that the center is approximately 6 inches lower than the outer edges, so water will flow across the center and not around the ends.
3. The maximum height of the check dam at the center of the weir shall not exceed 3 feet.
4. Spacing between dams shall be as shown on the drawings or as directed by the Contractor.

D. Dumped Rock Fill

1. Place and maintain dumped rock fill material for rock channel protection as indicated on the Contract Drawings and in accordance with *ODOT Item 610.07* and *601.08*.

E. Crusting Agent

1. The material shall be applied at the rate recommended by the manufacturer or as directed by the Contractor. Reapply as necessary to inhibit erosion and dust.

3.2 ADJUSTING

- A. Sediment shall be removed and temporarily placed onto the bank of the channel, ditch, or trap to dewater and, when necessary, for sampling. Excavation, sampling, and disposal of sediment shall be as specified in *Section 02210* and consistent with site regulations and Section 02001 – Site Work General Provisions.



- B. Remove accumulated sediment, debris, and obstructions as necessary from the ditches and the channels as directed by the Contractor. In no case shall sediment reduce the available depth in the ditches and channels to less than one-third the depth shown on the Construction Drawings.
- C. Remove accumulated sediment from the sediment trap before available depth is reduced to one-half its designed depth.
- D. Removal of Temporary Erosion Control Facilities.
 - 1. Erosion control facilities shall be removed at the direction of the Contractor after the disturbed areas are stabilized and established with grass or other measures approved by the Contractor.

3.3 GENERAL

- A. Limiting Surface Erosion: The Contractor has the authority to limit the surface area of erodible material exposed by clearing and grubbing, and to direct immediate permanent or temporary sediment control measures to prevent the transport of sediment. This includes, but is not limited to, the construction of berms, dikes, dams, ditches, sediment collection pits or basins, and the use of temporary seeding, mulches, matting, stone, riprap or other control devices as necessary to control erosion and the transport of sediment.
- B. Timing for Installation of Sediment Control Devices: The Subcontractor shall install all necessary sediment control devices prior to the start of any land disturbance. Soil erosion and sediment control facilities shall be adapted and/or expanded as construction proceeds to meet the requirements specified herein.
- C. Restrictions on Pumping of Silt Laden Water: Sediment-laden water shall not be pumped from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto. Sediment-laden water shall be discharged into settling basins located away from water courses so that only clear water enters the water course after the silt has settled out in the settling basin.
- D. Stockpiling of Excavated Soil: Excavated soil shall not be stockpiled adjacent to water courses in a manner that will cause sedimentation of the water course.



3.4 CONTROL OF WATER

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The Subcontractor shall maintain and operate adequate surface and subsurface drainage methods approved by the Contractor to keep the construction site dry, side slopes and bottom of excavations stable, and away from temporary stockpiles so as to prevent the saturation and degradation of the areas in accordance with this Specification and to the satisfaction of the Contractor. Surface water shall be controlled so that the stability of excavated and constructed slopes or bottom is not adversely affected by water, erosion is prevented, and flooding of excavations or damage to structures does not occur. Surface and rain water must be intercepted and drained away from excavations. Surface water shall not pond on subgrades, in excavations or on stockpiles.

3.5 APPLICATION OF VEGETATIVE LAYER SOIL AND SEEDING

The Subcontractor shall apply vegetative layer soil and seeding during temporary soil erosion and sedimentation control, and as part of the final cover in accordance with Section 02900 - Seeding. The Subcontractor shall keep seeded areas mowed and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain all seeded areas in an approved condition until final acceptance. When newly graded subgrade areas cannot be covered with vegetative layer soil and seeded because of season or weather conditions and will remain exposed for more than 30 days, the Subcontractor shall protect those areas against erosion and washouts by whatever means necessary such as straw applied with a hydromulch overspray, wood chips or by other contractor-approved measures. Prior to application of topsoil, any such materials applied for erosion control shall be thoroughly incorporated into the subgrade by discing. Vegetative layer soil containing excessive moisture, frost or in otherwise unworkable condition shall be stockpiled until it is suitable for spreading. Vegetative layer soil shall be placed on all non-paved disturbed areas and spread to a finished thickness as specified using equipment which will avoid excessive compaction. Vegetative layer soil required for temporary soil erosion control shall be placed and spread to a finished thickness of 4 inches. After vegetative layer soil has been spread, all large stiff clods, rocks, roots or other foreign matter shall be cleared and disposed of, as specified or approved, so that the finished surface will be acceptable for subsequent seeding.

3.6 FINAL ACCEPTANCE

The Subcontractor shall care for the seeded areas including keeping the grass cut until final acceptance by the Contractor as specified in Section 02900 - Seeding. Acceptance of the seeded areas will be based upon a satisfactory stand of grass. At any time prior to acceptance of work performed by the Subcontractor, areas which have been seeded which fail for any reason to produce a satisfactory growth of grass after a suitable period of time has elapsed shall be regraded (if necessary), fertilized and reseeded in the same manner as specified for the original work at the direction of the Contractor.



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Soil Erosion and Sedimentation Control

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Grading, seeding and fertilizing areas which fail to produce a satisfactory growth of grass shall be replaced at the expense of the Subcontractor.

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END OF SECTION